REMARKS

The present invention improves an overall efficiency of an LED chip. It accomplishes this by allowing more LEDs to be packed into the chip using dividing grooves and bridging wires. (Pg. 14, lns. 19–23) In the present invention, an insulating film is formed on the sides of the lighting elements and in the dividing grooves. The lighting elements are connected to each other in series using a wire that is formed by a thin metal film. The thin metal film is formed completely above the insulating film.

The Office Action rejected Claims 1–7 and 14–26 under 35 U.S.C. §102(e) as being anticipated by *Durocher et al.* (U.S. Pat. Pub. No. 2003/0160256).

> An anticipating reference must describe the patented subject matter with sufficient clarity and detail to establish that the subject matter existed in the prior art and that such existence would be recognized by persons of ordinary skill in the field of the invention.

See In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 678, 7 USPQ2d 1315, 1317 (Fed. Cir. 1988)

Durocher is directed to a flexible LED array that can be bent to a desired shape. (¶ 0023) *Durocher* uses a flexible base 41 which can be bent into the desired shape. LED Chips 59 are mounted on the flexible base 41. The LED Chips 59 include interconnect patterns 47 and 49 which are connected to the LED chips 59 through the electrodes 37 and the lead wires 63. (¶ 0060)

With respect to Claim 1, *Durocher* does not teach or suggest

> [T]he plurality of light emitting elements are connected in series such that a cathode electrode of a light emitting element is connected to an anode electrode of a different light emitting element using a wire formed by a thin metal film formed on the insulating film.

In *Durocher*, the lighting elements 59 are not electrically connected to each other in series, as shown in FIG. 9. Each of the light emitting elements 59 emits light via power supplied by a feed through electrode 37 and conductive interconnect patterns 47 and 49, which are provided for each of the light emitting elements 59. However, the conductive interconnect patterns 47 and 49 do not transmit electricity between the lighting elements 59. As seen in FIG. 9, the conductive interconnect patterns 47 and 49 are not connected to teach other. Thus, the light emitting elements 59 are not connected in series, since nothing electrically connects adjacent conductive interconnect patterns 47 and 49.

Furthermore, the light emitting elements (LED chips) 1 in FIG. 1 of *Durocher* are not electrically connected to each other in series. Each of the LED chips 1 emit light via power supplied by a cathode lead 3 and an anode lead 5, which are provided for each of the LED chips 1. In FIG. 1, tapered interior sidewalls 15 bridged between each adjacent cathode lead 3 and anode lead 5 reflects light emitted from the LED chip 1. (¶ 0004) LED Chip 1 is not electrically conductive and does not electrically connect each of the LED chips 1 to each other serially. If the tapered interior side wall 15 is electrically conductive, it is only necessary to provide a cathode lead 3 for an LED chip at one end of the array and an anode lead 5 for an LED chip at the other end of the array. However, as shown in FIG. 1, a cathode lead 3 and an anode lead 5 are provided for each of the LED chips.

In FIG. 1, power is supplied to the LED chip through lead wire 7, which is not formed by a thin metal film.

Durocher also does not teach or suggest "a phosphor film covering at least a main surface of the semiconductor multilayer structure which faces away from the substrate, wherein the semiconductor multilayer structure is divided into a plurality of portions by a division groove,

and each of the plurality of portions is an independent light emitting element." In *Durocher*, portions of the carrier 31 do not include the encapsulation material, such as the portions between the lighting elements 59. (FIG. 9) Notably, the phosphor film 65 is separately provided for each of the light emitting elements 59. Thus, *Durocher* does not teach that the phosphor film covers at least the main surface of the semiconductor multilayer structure which faces away form the substrate since only portions of the semiconductor multilayer structure where the lighting elements 59 reside are covered.

With respect to Claim 2, *Durocher* does not teach or suggest

> [T]he semiconductor multilayer structure includes a light reflective layer between the light emitting layer and the one of the plurality of main surface of the substrate.

Durocher teaches the reflective metal coating 57 and a LED chip 59, which are both in the cavity 35. The Office Action on Page 2 indicated that the substrate is flexible base material 41. However, as seen in FIG. 7, the reflective metal coating 57 is not between the flexible base material 41 and the LED chip 59 either partially or completely. The area between the LED chip 59 is the area directly underneath the LED chip 59 and directly above the flexible base material 41. No portion of the reflective metal coating 57 is in the area directly underneath the LED chip 59 and directly above the flexible base material 41. Thus, no portion of the reflective metal coating 57 is even partially between the flexible base material 41 and the LED chip 59.

All arguments for patentability with respect to Claim 1 are repeated and incorporated herein for Claim 24.

With respect to Claim 27, *Durocher* does not teach or suggest

> [T]he first electrode included in the first light emitting element is electrically connected to the second electrode included in the second light emitting element by a metal film.

As seen in FIG. 8, the LED chips 59 are electrically connected with the interconnect pattern 47, 49, through the electrodes 37 and the lead wires 63. (¶ 0060) Even if, as the Office Action asserts on Page 5, that every LED chip 59 includes an anode and a cathode, there is no indication that the LED chips are connected in series. The interconnect pattern 47, and 49, are not depicted as connecting the LED chips 59 in series or even to each other. Thus, there is no indication that the LED chips 59 are connected in series, instead of in parallel or not even being connected at all.

There is no indication in FIG. 1 that the LED chips 1 are connected to each other in series. If the LED chips 1 were connected to each other in series, then only a single cathode lead and a single anode lead would be provided for all of the LED chips 1 combined. However, as seen in FIG. 1, a cathode lead 3 and an anode lead 5 are provided for each of the LED chips 1. In addition, FIG. 1 does not depict the other structure recited in the present invention such as "laminating a first conductive layer to which a first electrode is connected, a light emitting layer, and a second conductive layer to which a second electrode is connected, on the substrate in this order." There is also no indication in FIG. 1 that the lead wire 7 is a "metal film." Furthermore, since, FIG. 1 depicts the prior art, which *Durocher* indicates is an undesirable design due to its inflexibility, FIG. 1 teaches away from the teachings of *Durocher*. Thus, there is no indication that FIG. 1 should be combined with the invention disclosed in *Durocher*.

In contrast, as seen in FIG. 4A and FIG. 4B of the present invention, the bridging wire 30 is connected to an anode 20 in a first lighting element and a cathode 24 in a second lighting element. Thus, the lighting elements in the present invention are connected in series.

With respect to Claim 28, *Durocher* does not teach or suggest "an insulating film formed on a side surface of the first light emitting element and a side surface of the second light emitting

element, wherein the entire metal film is formed above the insulating film." The Office Action on Page 6 cites to encapsulating material 65 as the insulating film. However, the present invention as recited in Claim 28 includes the entire metal film formed above the insulating film. As seen in FIG. 10, lead wire 63 is formed only on a portion of the encapsulating material 65 and is not formed entirely above the encapsulating material 65.

In contrast, as seen in FIG. 4A and 4B of the present invention, the bridging wire 30 is formed entirely above the insulating film 28.

Dependent Claims 2-7, 14-21, 25, 26, and 28-40 depend from and further define Independent Claims 1, 24, and 27 and are thus allowable, too.

It is now believed the present application is in condition for allowance and an early notification of the same is requested.

If there are any questions with regards to this matter the undersigned attorney can be contacted at the below listed telephone number.

Very truly yours,

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